AROA ECM™

Myriad Matrix™

Application Notes

Unlocking regenerative healing for every*body*

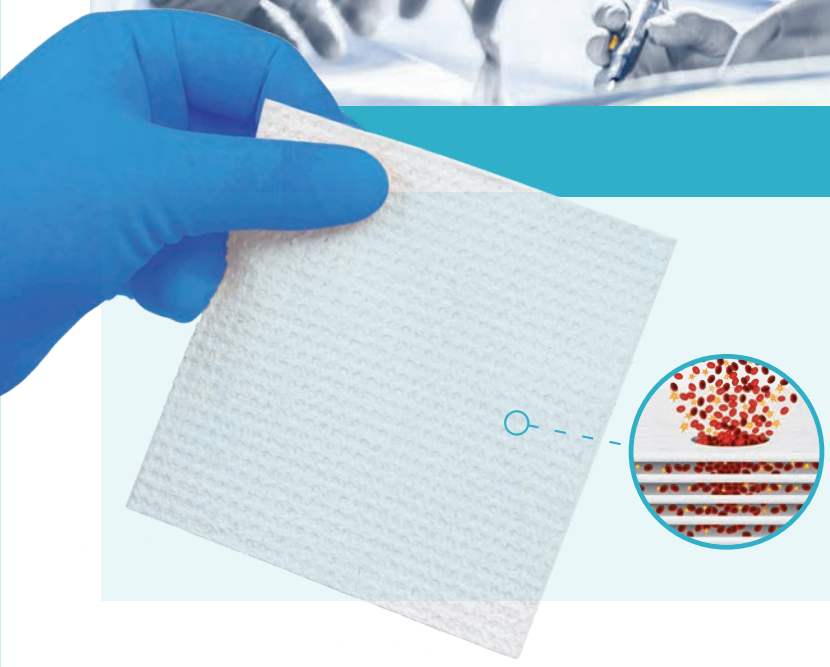
AROA™

Myriad Matrix™

Soft Tissue Bioscaffold

Contents

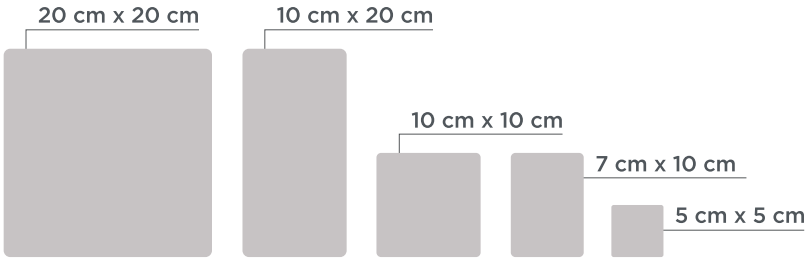
Myriad Matrix™



Available as 2-, 3- or 5-layers of non-crosslinked AROA ECM™

For **soft tissue reconstruction, reinforcement** or **complex wounds**

Myriad Matrix comes in a range of sizes



Myriad Matrix™

Soft Tissue Bioscaffold

General

Always read the **Instructions For Use**. Prescription use only. The following guidelines should not supersede professional or institutional guidelines. These guidelines have been developed based on good surgical technique and the experience of surgeons. The guidelines are intended to be a quick reference to important information on the use of **Myriad Matrix™**. For additional information contact your Sales Representative or visit **www.aroabio.com**.

Preparation of the Site

Prepare the wound bed by cleansing, irrigation and, if necessary, sharp or ultrasonic debridement to ensure the wound is free of debris, necrotic tissue or infected tissue.

If the tissue defect has been irrigated with antiseptic solutions (e.g. hypochlorous acid, sodium hypochlorite, Povidone-iodine, chlorhexidine gluconate) it is recommended to rinse the area with sterile saline prior to application of **Myriad Matrix**. Antiseptic solutions may damage the structure and extracellular matrix (ECM) components found in **Myriad Matrix**.

Ideally the tissue deficit will have healthy and well vascularised tissue to optimise the incorporation of **Myriad Matrix**. Do not apply **Myriad Matrix** in the presence of uncontrolled clinical infection.

Wound bed contamination is known to limit the use of certain dermal matrices due to high rates of infection.[1-3] **Myriad Matrix** has been shown to be relatively resistant to bacterial contamination and may be used in contaminated soft tissue defects without having to wait till a pristine wound bed is achieved.[4-6]

Where exposed bone is present, including calvarium, and denuded of the vascularised periosteum, a burr or drill attachment may be used to expose the vascular diploe. **Myriad Matrix** can then be applied to the bleeding calvarium or bone.

Product Selection

Myriad Matrix is available in 2-layer, 3-layer and 5-layer configurations. Thicker configurations of **Myriad Matrix** may persist longer in the wound. Consider using;

- 2-Layer and 3-layer configurations in superficial and partial-thickness defects.
- 3-Layer and 5-layer for deep-partial and full thickness defects with, or without, exposed structures.

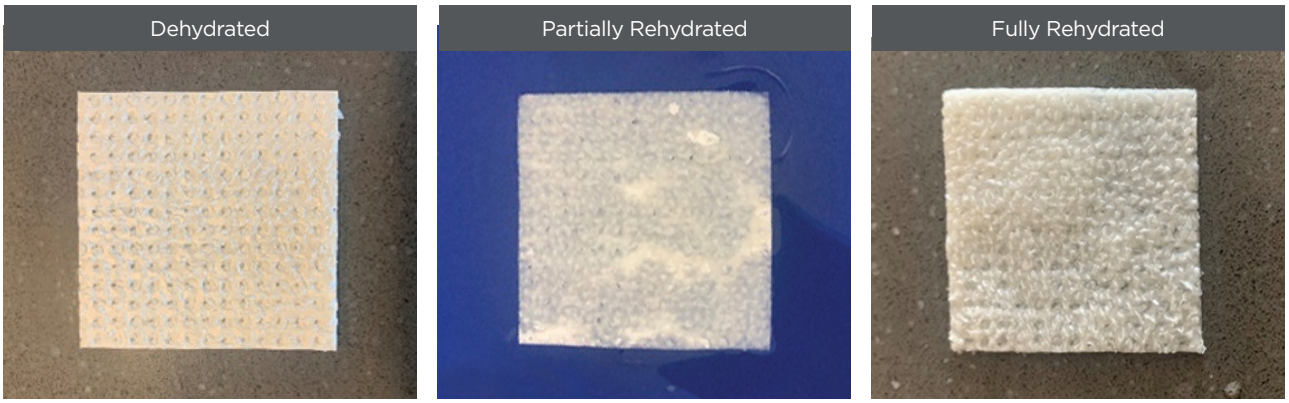
Preparing Myriad Matrix

Prior to and during rehydration of the device it is important to limit excessive handling to preserve the engineered multi-layer structure of the device.

1) Once removed from the packaging using aseptic technique, place the **Myriad Matrix** device in a shallow sterile bowl or basin, ensuring that the container is larger than the device, so the device can lie flat during rehydration.
2) Add sufficient sterile saline to cover the device and rehydrate.

As the device rehydrates you may notice a change in the appearance of the device, from white to opaque (Figure 1).

Figure 1

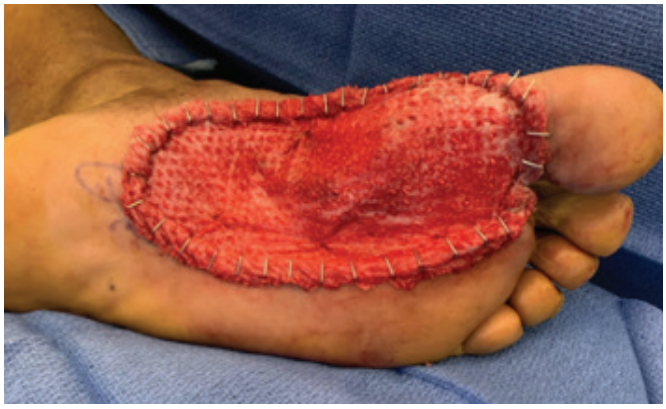


Do not rehydrate **Myriad Matrix** in antiseptic solutions (e.g. hypochlorous acid, sodium hypochlorite, Povidone-iodine, chlorhexidine gluconate) as these chemical disinfectants may damage the structure or ECM components.

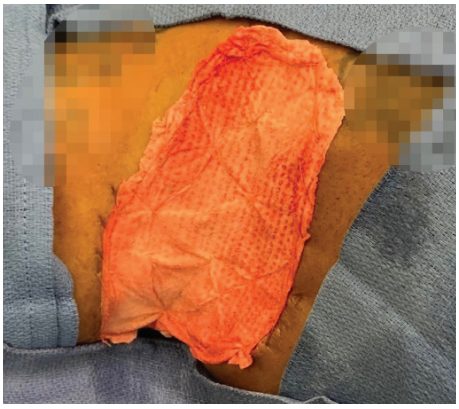
Always use asceptic technique e.g. avoid placing the device on linting surfaces (e.g. surgical drapes, back table drapes) as lint fibers may contaminate the device and have been known to increase rates of infection.[7, 8]

3) Trim **Myriad Matrix** to fit, if necessary, providing an allowance for overlap. Position the device to achieve maximum contact between the device and prepared wound surface. It is recommended to suture, or staple the device in place, avoiding excess tension (Figure 2). Fixing the device in place helps to ensure intimate contact with the underlying wound bed and reduces movement of the device during the healing process. Also, consider bolster staples or sutures to the central part of the device to further ensure intimate and sustained contact to the underlying tissue.

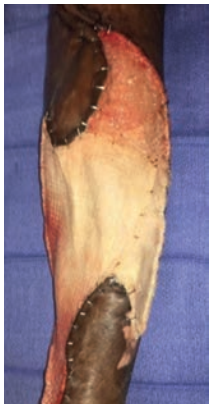
Figure 2. Examples of **Myriad Matrix** surgical fixation.



Stapled to the wound perimeter of the foot plantar.



Sutured to wound perimeter on axilla. Tacked down with interrupted absorbable sutures in central portion.



Multiple devices may be sutured together.

Dressing Selection

Myriad Matrix may be used with a range of primary and secondary dressings.

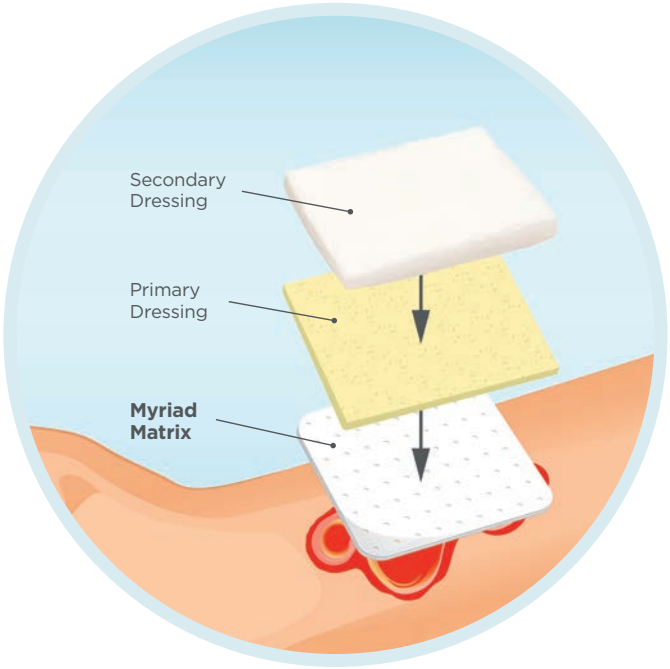


Figure 3.
Use of **Myriad Matrix** with primary and secondary dressings.

Primary Dressing

It is recommended to use a non-adherent petrolatum or silicon-based dressing (e.g. Xeroform®, Adaptic™ or Mepitel®) (Figure 3) placed directly in contact with **Myriad Matrix** to the surrounding tissue to prevent loss and limit movement.

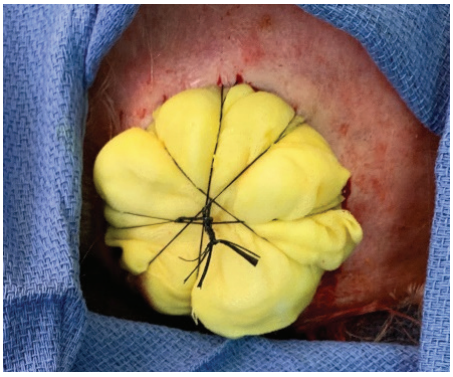
Secondary Dressing

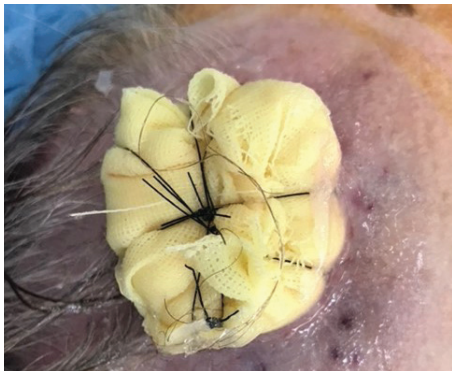
Secondary dressings, including foams, abdominal gauze (ABD) pads, NPWT or bolster dressings can be used in conjunction with **Myriad Matrix** dependent on the level of exudate, patient factors, wound site and institutional protocols.

Bolster Dressing

Repair of full thickness wounds, for example following tumour resections (Figure 4), may benefit from the use of a secondary bolster dressing (e.g. cotton wool, gauze) to ensure intimate contact between **Myriad Matrix** and the underlying tissues.

Figure 4. Use of a bolster dressing to ensure approximation of **Myriad Matrix** to the underlying tissue defect.





NPWT

Myriad Matrix is compatible with standard NPWT devices. When utilising NPWT as a secondary dressing, it is important to have a non-adherent dressing placed between **Myriad Matrix** and the foam interface dressing. The non-adherent dressing can be placed directly over **Myriad Matrix** with the option to secure it in place with sutures. It is recommended that the foam interface be changed no sooner than 3-5 days to allow for adequate integration of the graft, but this is at the clinician's discretion. When implanted under an incisional closure or reconstructive tissue flap, **Myriad Matrix** is compatible with incisional NPWT.

Dressing Changes

Dressing change frequency is determined by several factors, including;

- The amount of **Myriad Matrix** applied (i.e. 2-, 3- or 5-layers)
- The size and depth of the soft tissue defect
- The amount of exudate
- Institutional and clinical guidelines

The use of **Myriad Matrix** should not increase the frequency of dressing changes.

Dressing Change Guidance

It is important to ensure **Myriad Matrix** remains adequately hydrated between dressing changes. The first dressing change is recommended between days 5-7.

At the scheduled dressing change, carefully remove the secondary and primary dressings to avoid disrupting **Myriad Matrix** in the wound bed.

Consider leaving the primary dressing in place for the initial 10-14 days to minimise interference with incorporation of **Myriad Matrix**.

If portions of **Myriad Matrix** adhere to the primary dressing, add saline to hydrate and loosen the adherent material.

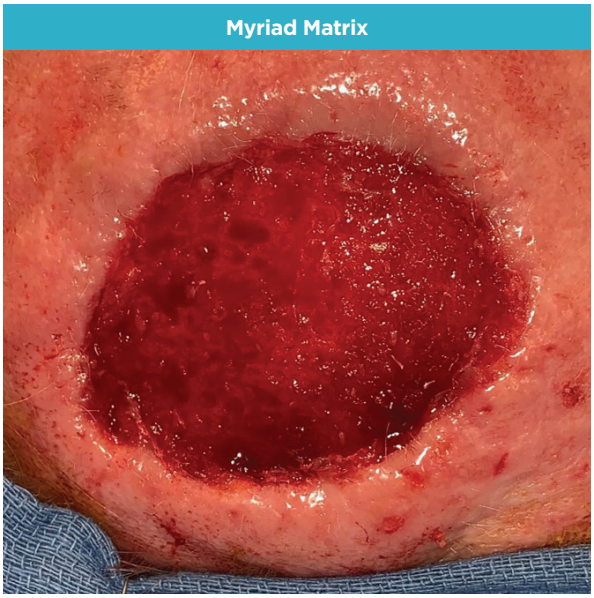
Moisture retention: A moist wound environment is important for wound healing and soft tissue repair. Always ensure **Myriad Matrix** is fully rehydrated prior to use in either implant or dermal repair procedures. Where moisture retention is a potential concern, consider using a moistened alginate-based dressing placed over the non-adherent dressing. Additionally, a hydrogel may be added to the surface of **Myriad Matrix**, or on top of the primary dressing.

What to Expect on Placement of the Device

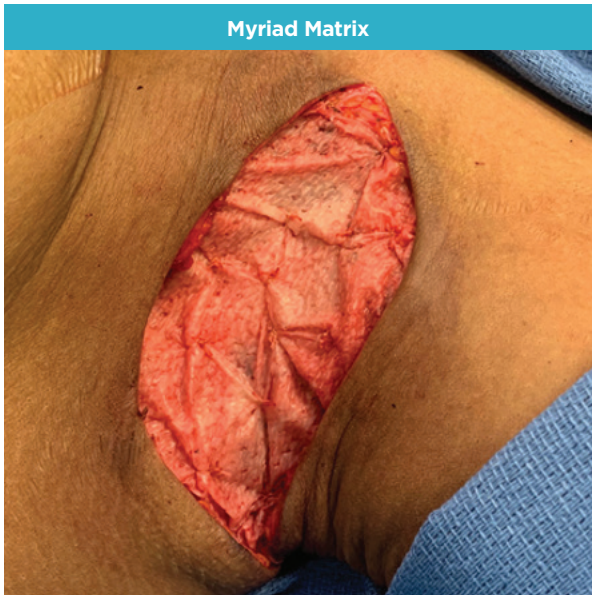
Myriad Matrix absorbs blood and blood components once placed in contact with the tissue defect. Absorption of blood and blood components will be visible on placement of the device (Figure 5).

Figure 5. Appearance of **Myriad Matrix** on application to the soft tissue defect.

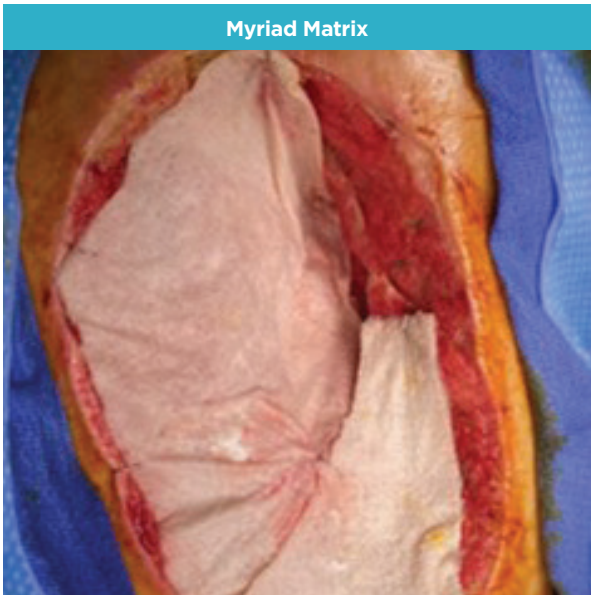
Trans metatarsal amputation.



Scalp tumour resection.



Axilla resection.



Hip trauma defect

Device Appearance and Integration in a Soft Tissue Defect

Myriad Matrix incorporates into the wound bed over time as the devices provide a scaffold for new tissue formation.

The rate of incorporation is dependent on several factors such as the thickness of **Myriad Matrix** used, patient factors and site of the tissue deficit. Typically, buds of granulation tissue will be visible by 7-14 days as the device begins to integrate into the newly formed tissue (Figure 6).

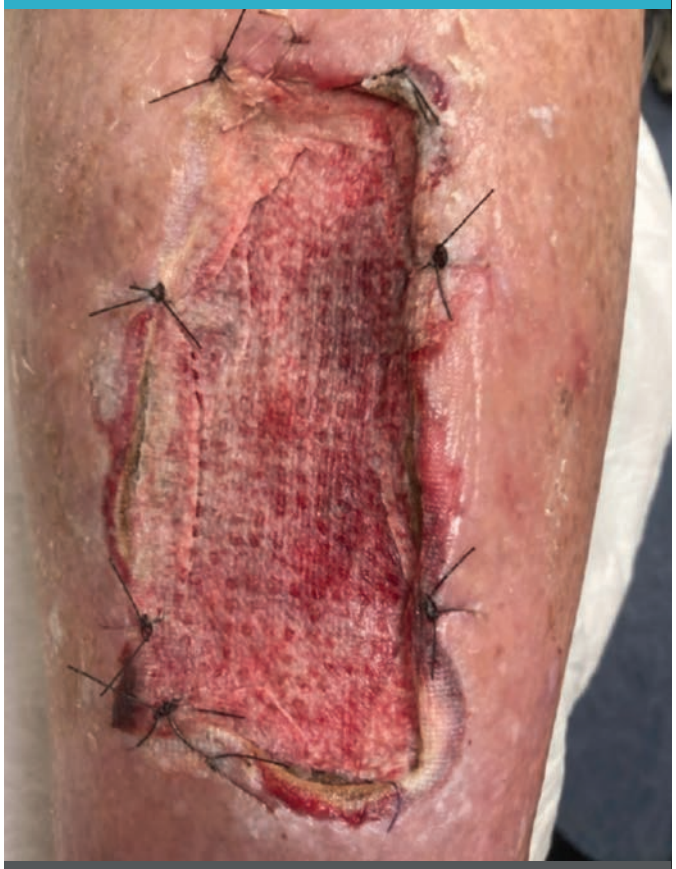
Allow time for the device to incorporate. Tissue repair takes time, especially in instances of full thickness injuries, or significant volumetric tissue loss. Patience is required during the early stage of healing (<14 days) as the patient's cells populate the **Myriad Matrix** scaffold and begin the tissue repair process.

Early Timepoints (<14 days)

Figure 6. **Myriad Matrix** at early (<14 days) timepoints.

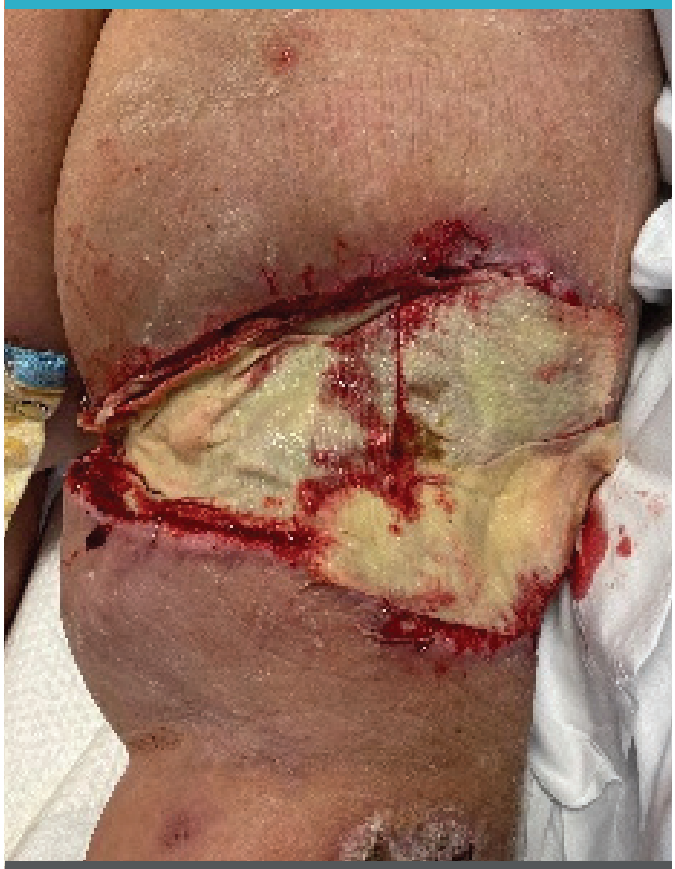
Figure 6 (Continued from previous page). **Myriad Matrix** at early (<14 days) timepoints.

Leg Hematoma Defect



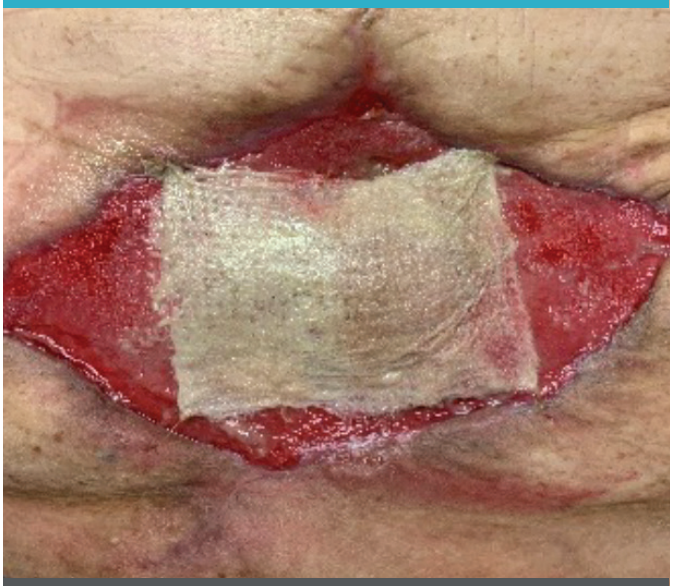
1 week

Arm Trauma



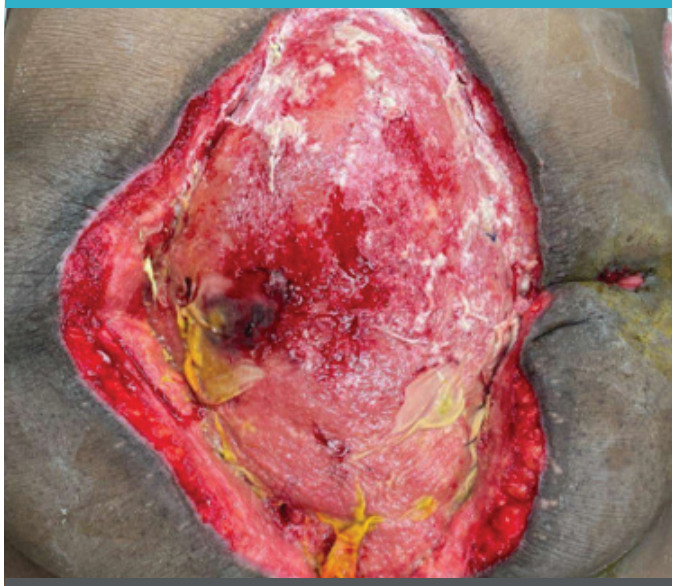
1 week

Abdominal Dehiscence



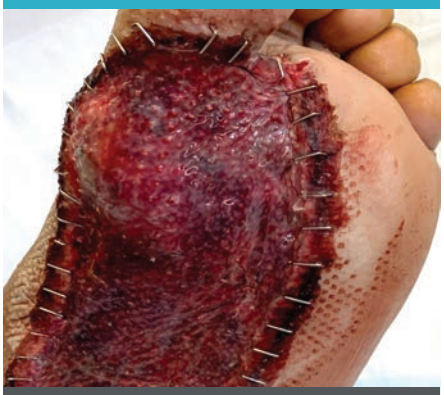
1 week

Abdominal Gunshot Wound



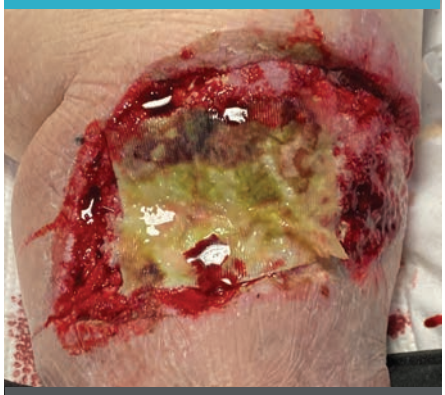
1 week

Fibromatosis Resection



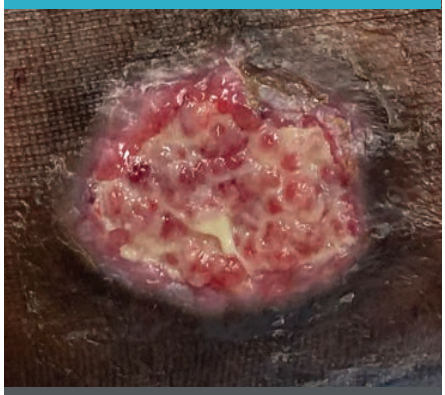
4 days

Leg Trauma



1 week

Leg Ulcer



1 week

Later Timepoints (>14 days)

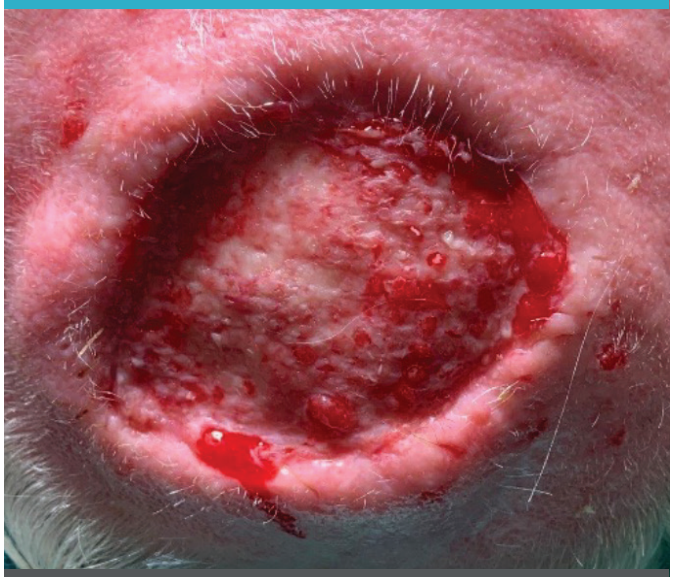
Over time the extent of newly formed tissue will increase as **Myriad Matrix** becomes fully incorporated into the newly formed tissue (Figure 7).

As **Myriad Matrix** incorporates into a soft tissue defect, it can be observed as a caramel or cream-coloured residue. **This is normal and residual Myriad should not be removed.** An odour may be observed at the dressing change.

Residual Myriad

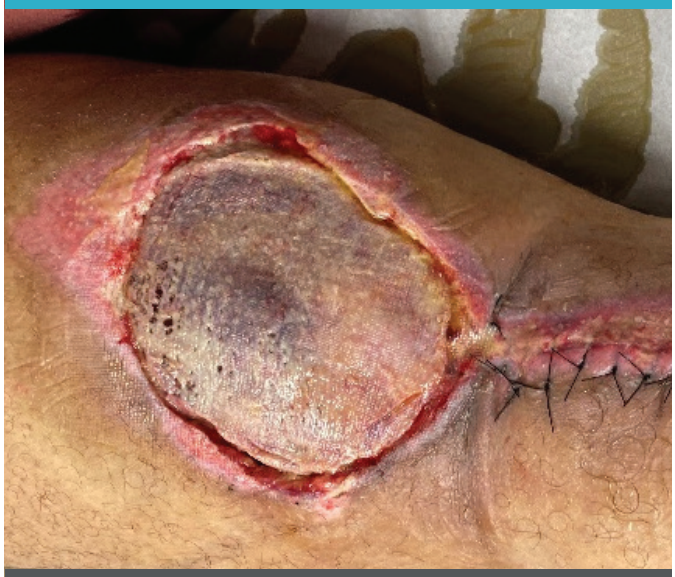
Figure 7. **Myriad Matrix** at later (+14 days) timepoints

Scalp Tumour Resection



2 weeks

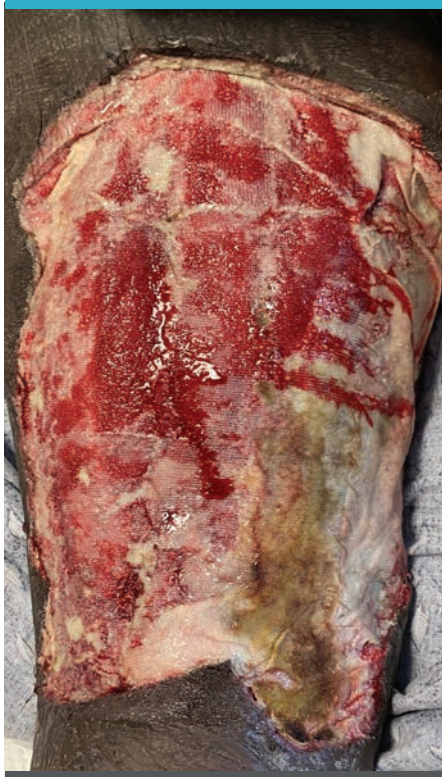
Leg Trauma



2 weeks

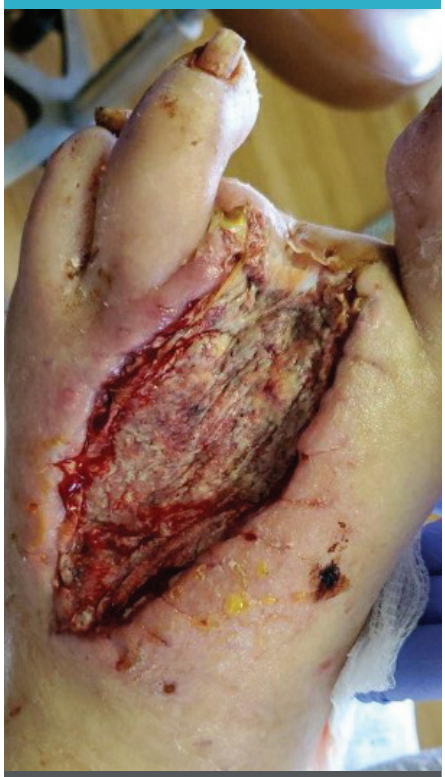
Figure 7 (Continued from previous page). **Myriad Matrix** at later (+14 days) timepoints

NSTI



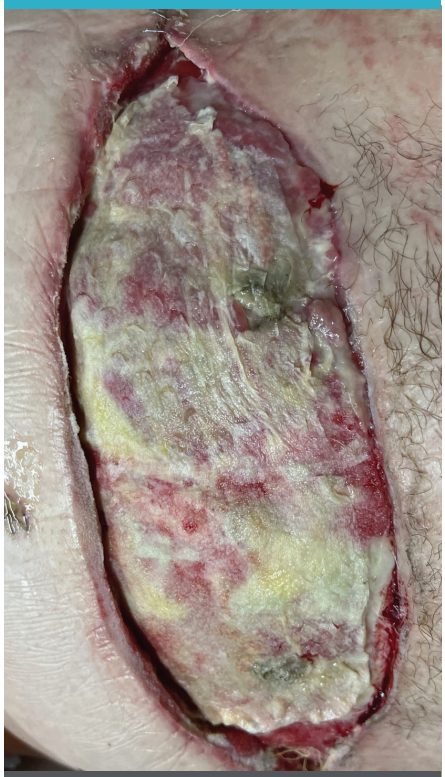
2.5 weeks

DFU with NSTI



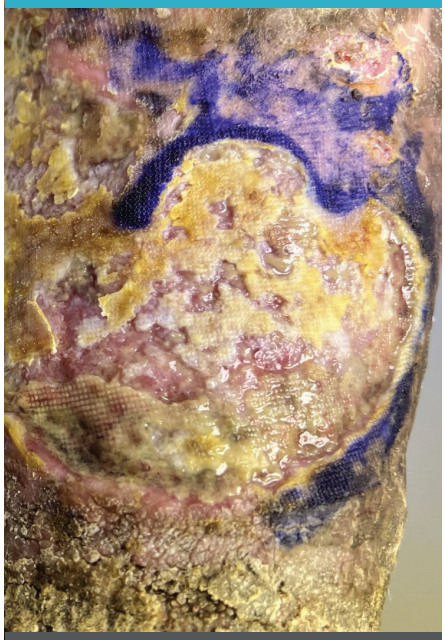
2.5 weeks

Abdominal Dehiscence



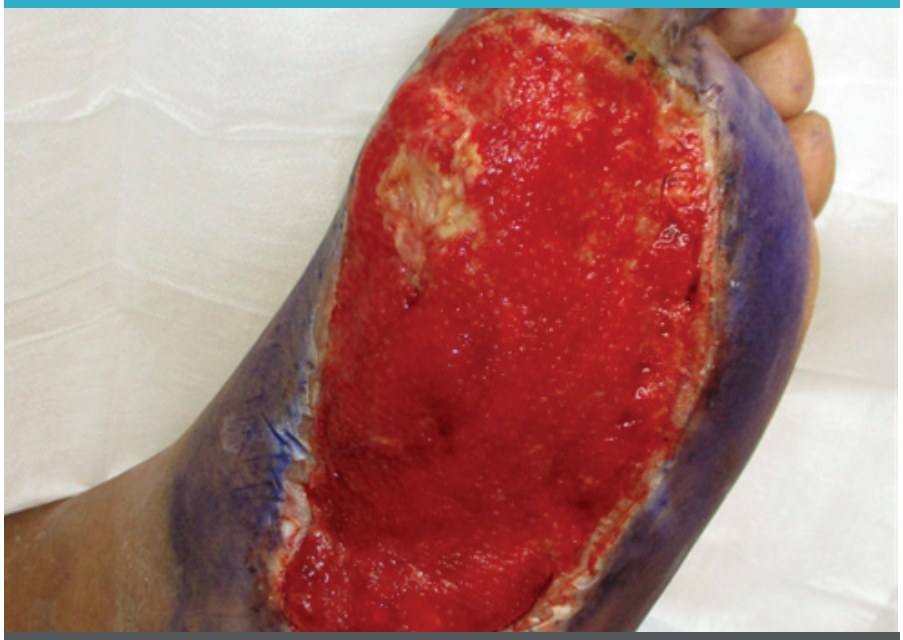
3 weeks

VLU



4 weeks

Fibromatosis Resection



2.5 weeks

The presence of residual **Myriad** and/or an odour do not necessarily signify an infection in isolation of the established clinical signs and symptoms of infection.

It is important to leave residual **Myriad** in place for the following reasons:

- As a mimic of tissue ECM, **Myriad Matrix** helps facilitate various cellular processes that occur during healing.[9, 10] Like tissue ECM, **Myriad Matrix** may also undergo degradation by tissue proteases.
- If **Myriad Matrix** is degraded by tissue proteases, a caramel or cream-coloured residue may form that has a similar appearance and odour to slough. This is expected as both slough and residual **Myriad** comprise enzymatically digested ECM fragments.
- An important difference is that residual **Myriad** contains ECM components that aid healing and modulate inflammation.[11, 12]
- Residual **Myriad** will continue to facilitate building new tissue as it incorporates and is remodelled into the wound bed.
- The rate of incorporation will vary between wounds. It is important to leave residual **Myriad** in place unless a complication is suspected.

Myriad Matrix persists in the wound bed to help facilitate growth of vascular, organised and functional tissue.

- Contains >150 ECM proteins known to be important in healing.[11]
- Residual vascular channels that aid in the establishment of new vasculature.[13]
- Facilitates functional tissue by providing the natural structure of an ECM bioscaffold.[10]

Figure 8. **Myriad Matrix** made from **AROA ECM™** technology, contains >150 ECM proteins

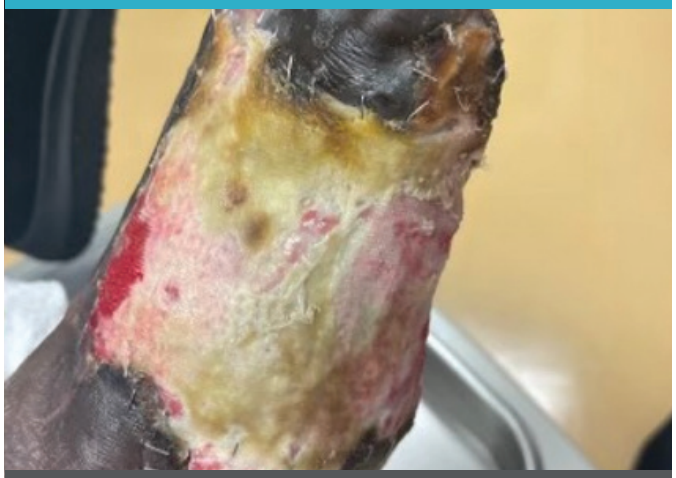
Repeat applications of **Myriad Matrix** are generally not required. However, large volumetric defects with significant depth may benefit from additional **Myriad Matrix** applications to ensure adequate tissue infill.

Moist Wound Environment

It is important to keep **Myriad Matrix** hydrated to ensure optimised healing. If the **Myriad Matrix** device appears dry or hardened with a yellow/brown colour (Figure 9), rehydrate with saline or hydrogel. A hydrogel may be applied over the primary dressing every 2-3 days. If the device appears adequately hydrated, consider extending the dressing change to 5-7 days.

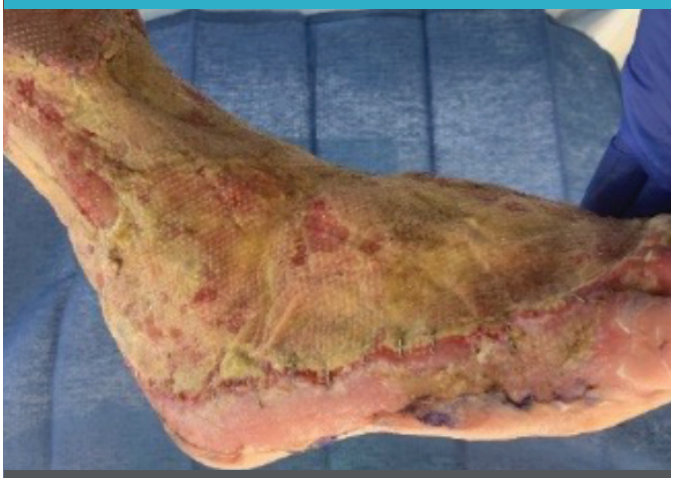
Figure 9. Examples that need hydrating.

NSTI



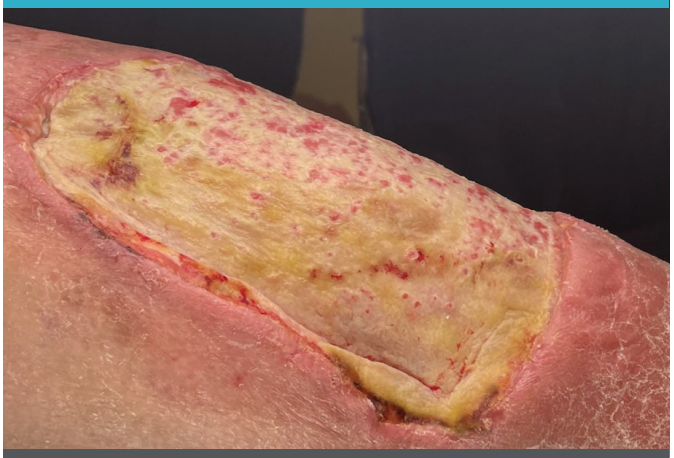
2.5 weeks

NSTI



1 week

Leg Trauma



3 weeks

Debridement During the Course of Healing

During the course of healing and during dressing changes, the surface of the **Myriad Matrix** may be gently debrided to remove any non-adherent ECM material. However, care should be taken to not remove any adherent portions of the **Myriad Matrix** that have yet to incorporate. These areas are easily identified by the white-cream appearance of **Myriad Matrix** (Figure 10). Well vascularised granulation tissue is often noted if non-adherent portions of the product are debrided from the surface.

Figure 10. Debridement during the course of healing.

Definitive Closure

Once a robust bed of well vascularised granulation tissue has been established in the wound bed, definitive closure may be achieved either via a split thickness skin graft, or closure via secondary intention. Definitive closure is at the surgeon's discretion taking into account patient factors and institutional guidelines. If the dermal defect is to be closed via secondary intention, consider **Endoform™** products to facilitate epithelialisation.

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RX Only.

Prior to use, be sure to read the entire Instructions For Use package insert supplied with the product. Consult your local sales representative for country specific information.

AROA™

www.aroa.com

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